NAG8-888

FNAS Short Term Solar Flare Prediction Algorithm

SEMI - ANNUAL REPORT

August 1, 1992 - February 1, 1993

Submitted to

National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Prepared by

Jesse B. Smith
Principal Investigator

Submitted by

The University of Alabama in Huntsville
Huntsville, AL 35899

Progress Report

August 1992 - February 1993

Development, Refinement, and Testing of a Short Term Solar Flare PRediction Algorithm
NAG8-888

Submitted to:

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ES 52 NASA/MSFC
Marshall Space Flight Center, Alabama 35812

Submitted by:

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The University of Alabama in Huntsville
Huntsville, AL 35899

Progress toward performance of the tasks and accomplishing the goals set forth in the two year Research Grant included primarily analysis of digital data sets and determination of methodology associated with the analysis of the very large, unique and complex collection of digital solar magnetic field data.

The treatment of each magnetogram as a unique set of data requiring special treatment was found to be necessary. It is determined that a person familiar with the data, the analysis system, and logical, coherent outcome of the analysis must conduct each analysis, and interact with the analysis program(s) significantly - sometimes many iterations for successful calibration and analysis of the data set. With this interaction, the data sets yield valuable, coherent analyses.

During this period, it was also decided that only data sets taken inside heliographic longitudes (Central Meridian Distance) East and West 30 degrees (within 30 degrees of the Central Meridian of the Sun). If the total data set is then found to be numerically inadequate for the final analysis, 30 - 45 degrees Central Meridian Distance data will then be analyzed.

The Optical Data storage system (MSFC observatory) has been found appropriate for use both in intermediate storage of the data (preliminary to analysis), and for storage of the analyzed data sets for later parametric extraction.

PLANS: Efforts during the next six months will be directed toward analysis of further observational data sets.

Attachments: One sample set of calibrated, analyzed data.

MARSHALL SPACE FLIGHT CENTER MAGNETOGRAMS

TELEPHONE : 205-544-7632 FTS:824-7632

LONGITUDINAL PLOT

29-JUN-93 23:49:18

REGION NUMBER: 6994

DATE: 07-JAN-92

DAY: 7 HR:18 MIN:54 SEC:46

X(10,120) Y(10,120)

ZEISS FILTER:1269

ENHANCEMENTS: 128

EXPOSURE: 65

XPOS: -0.03 YPOS: 2.29

CK= 0.700000E+01
C1= 0.000000E+00
C2= 0.000000E+00

A	25	H	-25
B	100	I	-100
C	500	J	-500
D	1000	K	-1000
E	1500	L	-1500
F	2000	M	-2000
G	2500	N	-2500

N
E W
S

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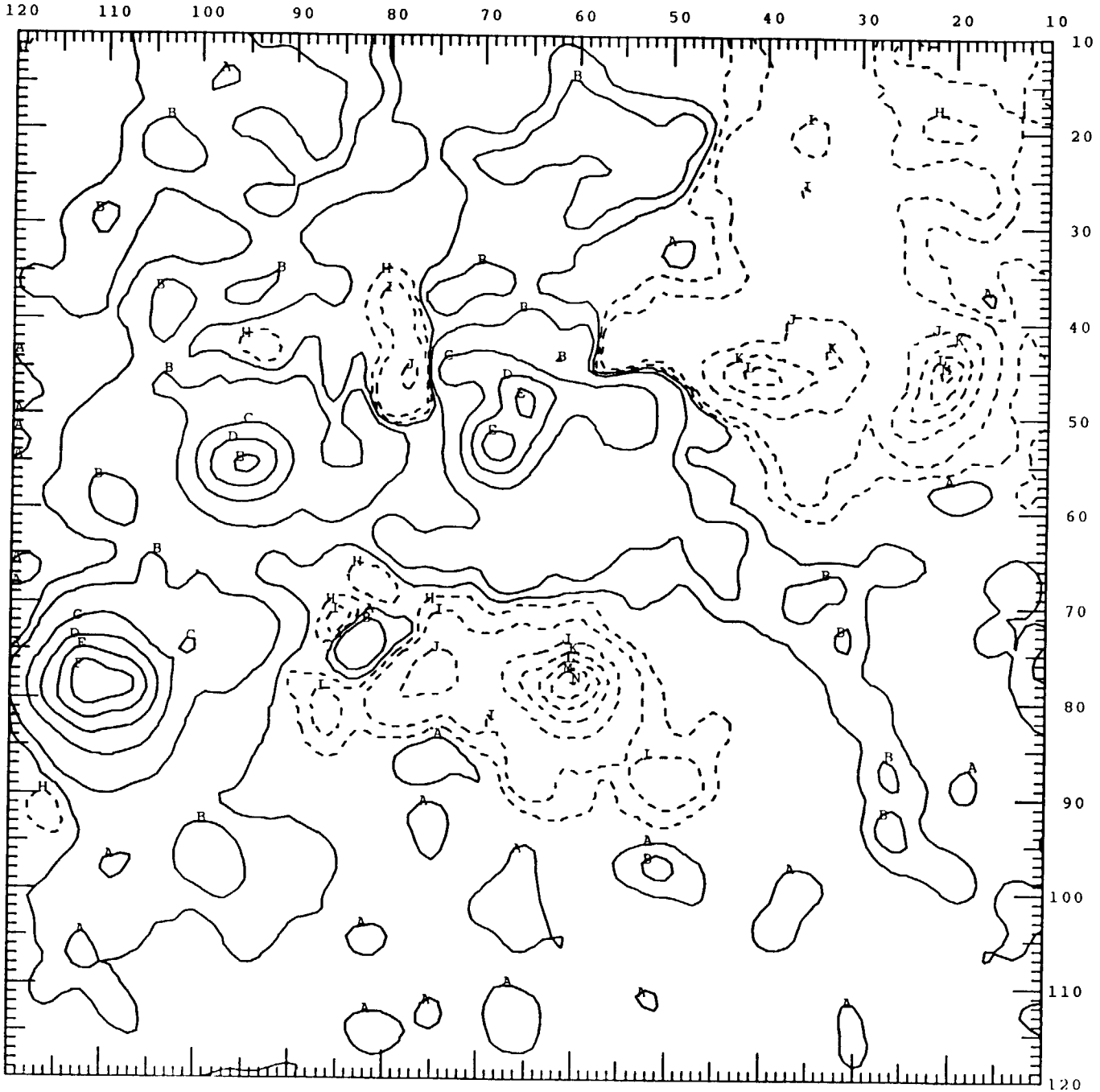

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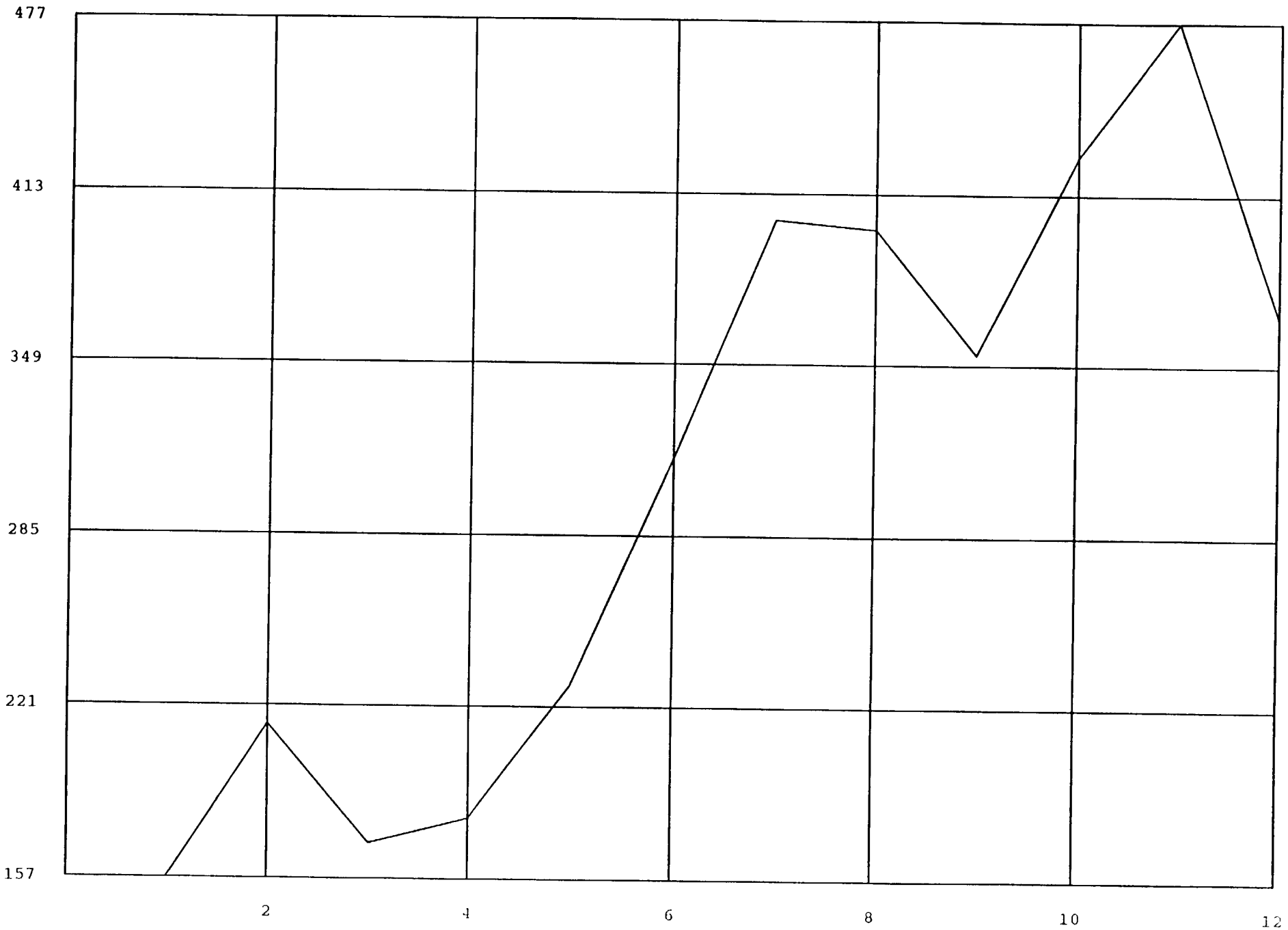

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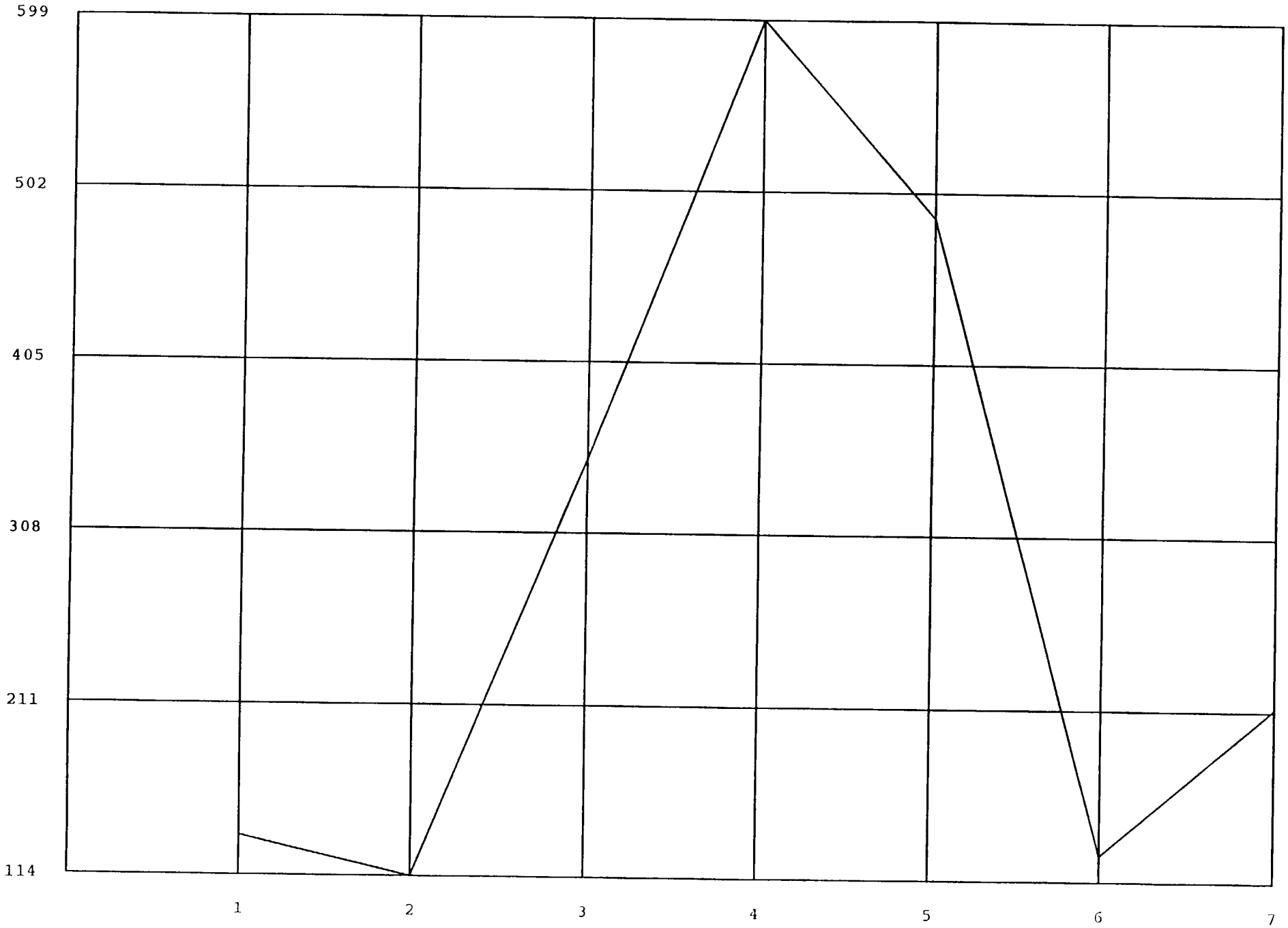

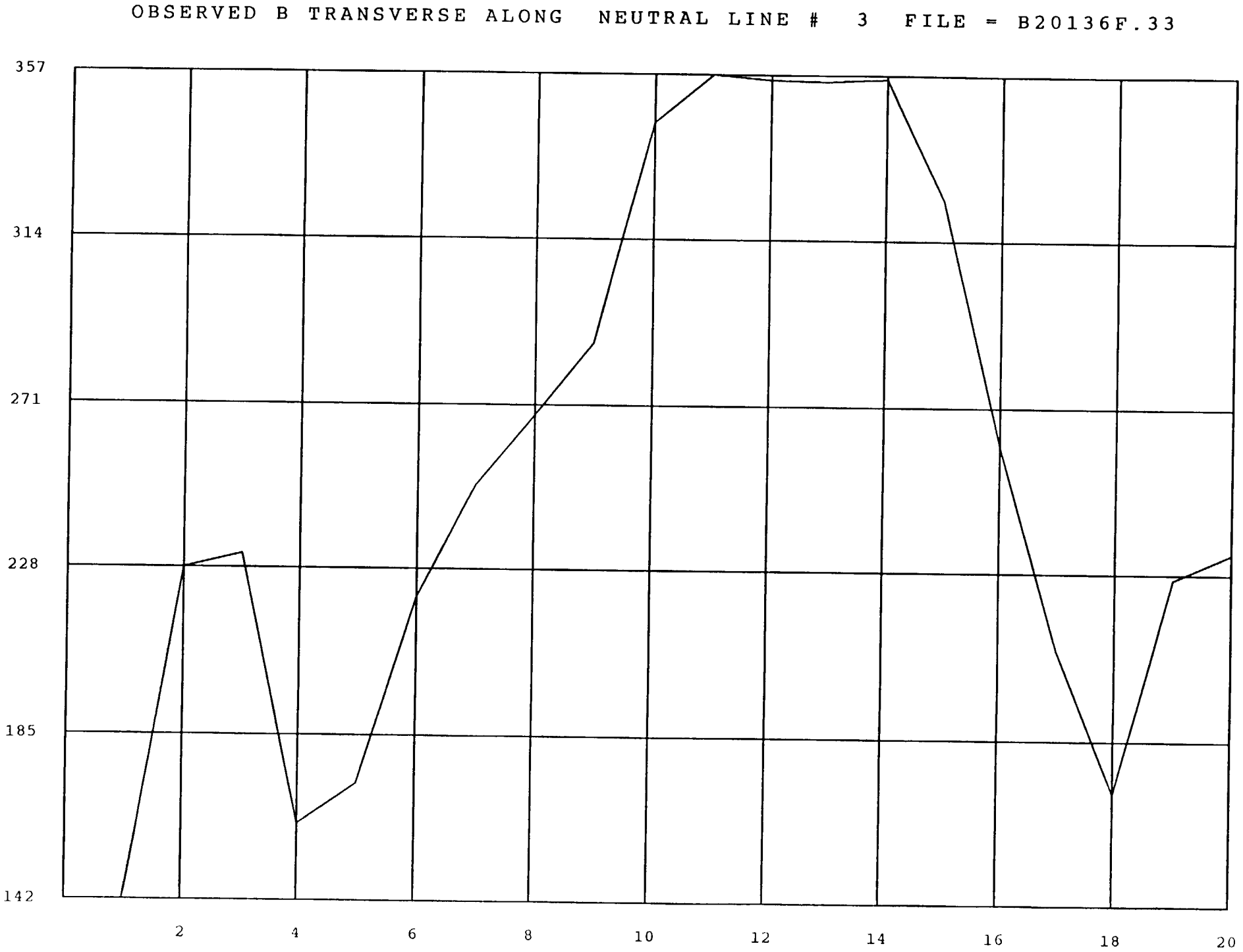
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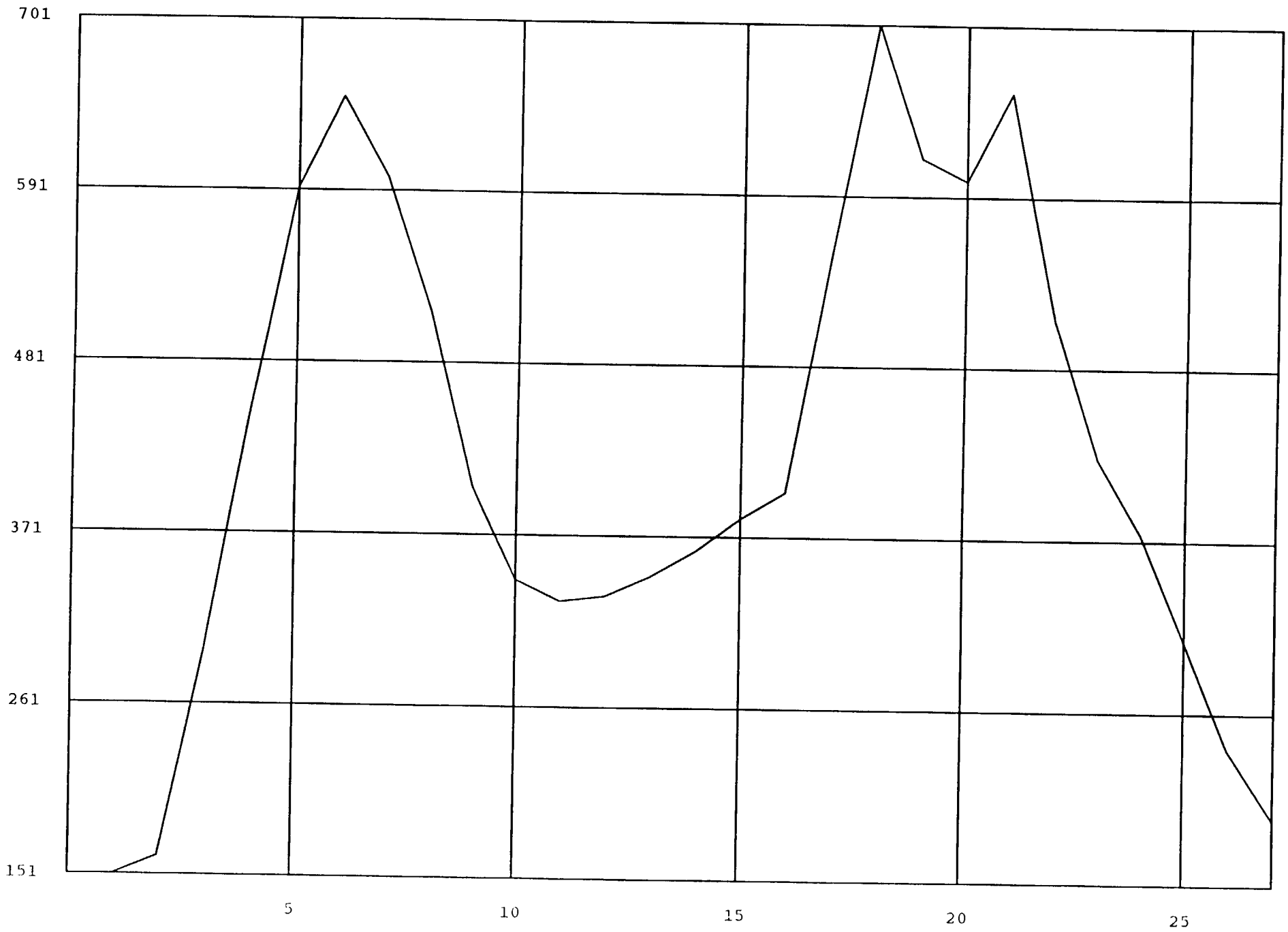
142
2
4
6
8
10
12
14
16
18
20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481
371
261
151
5
10
15
20
25

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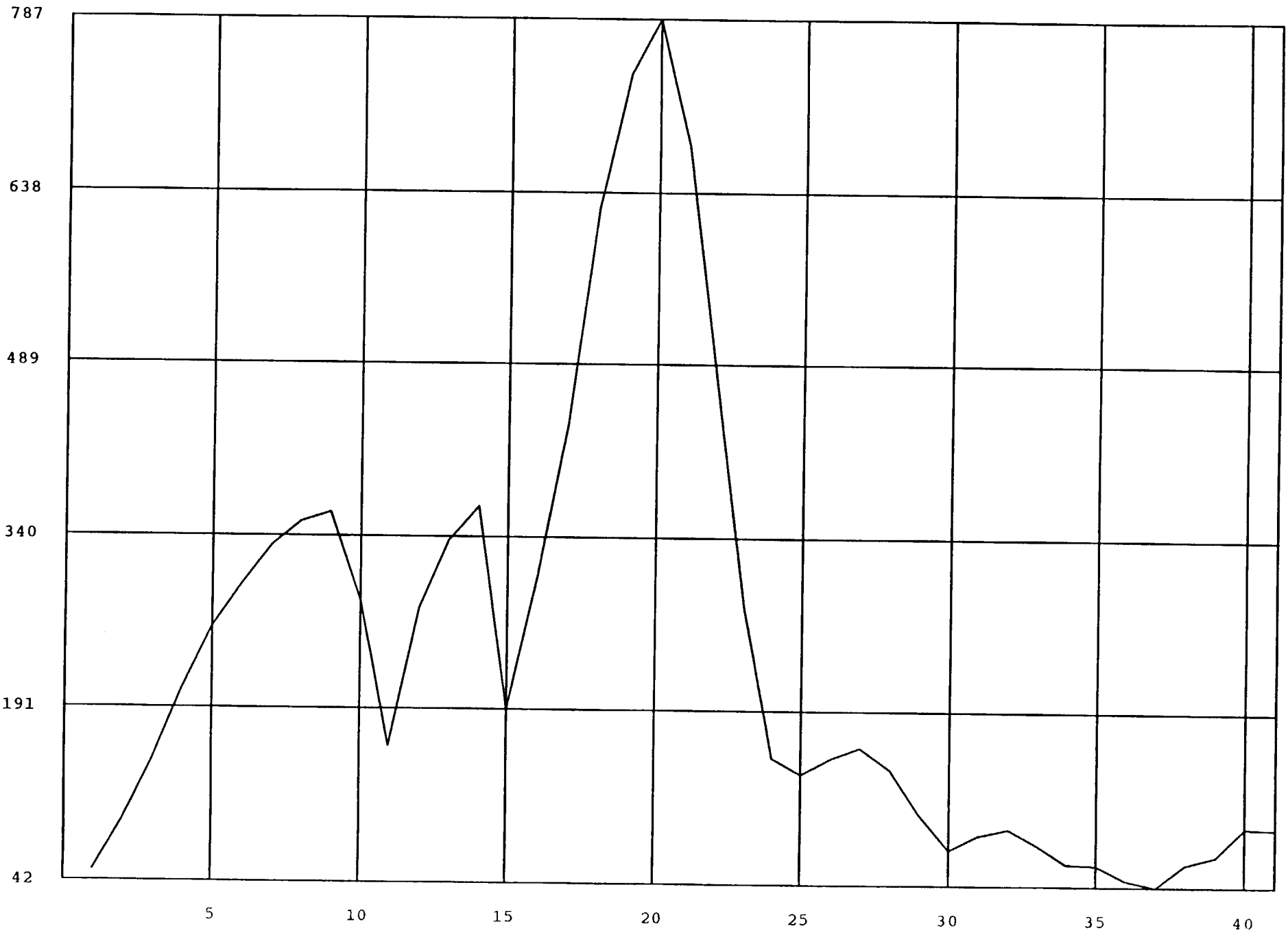

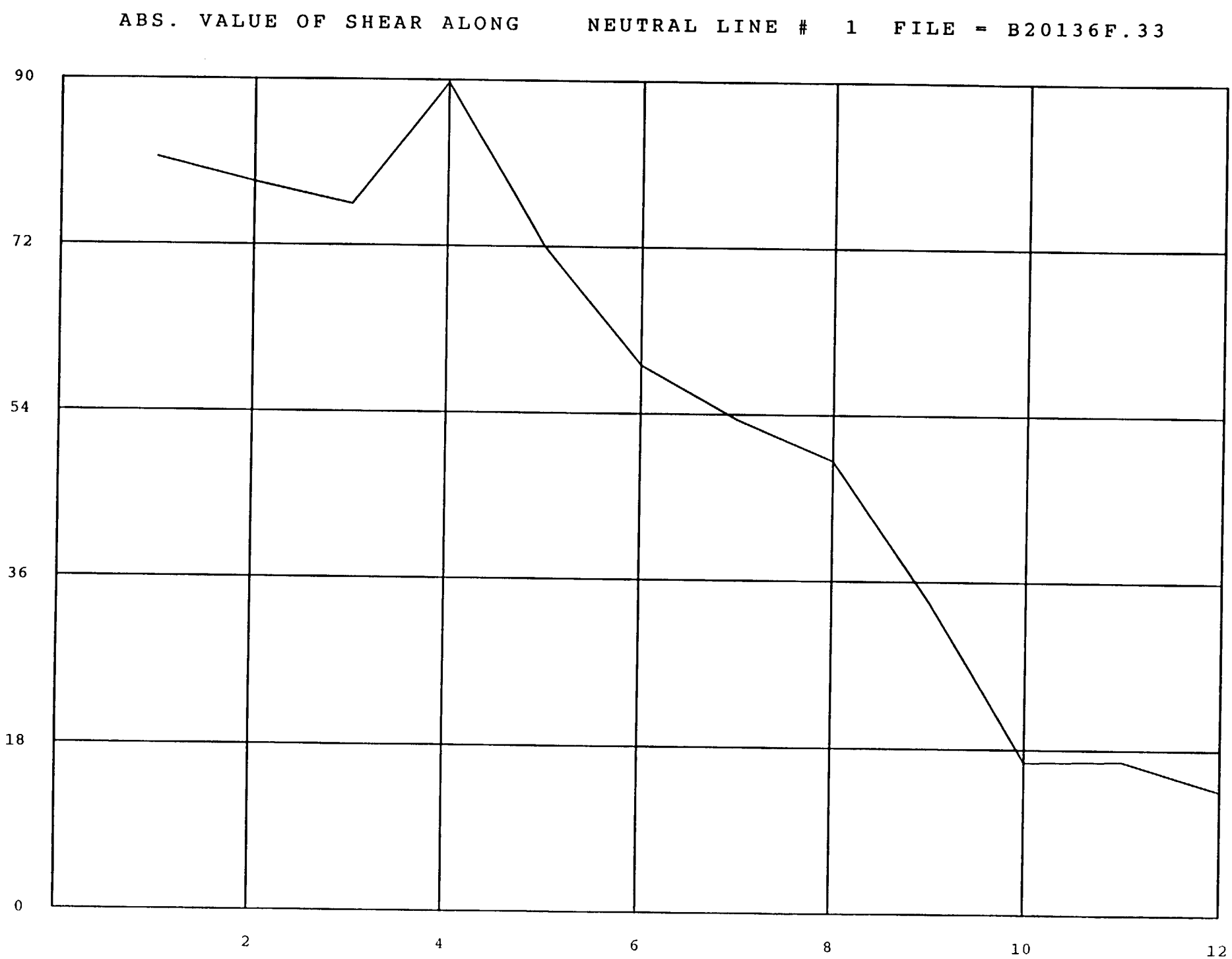
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72
54
36
18
0
2
4
6
8
10
12

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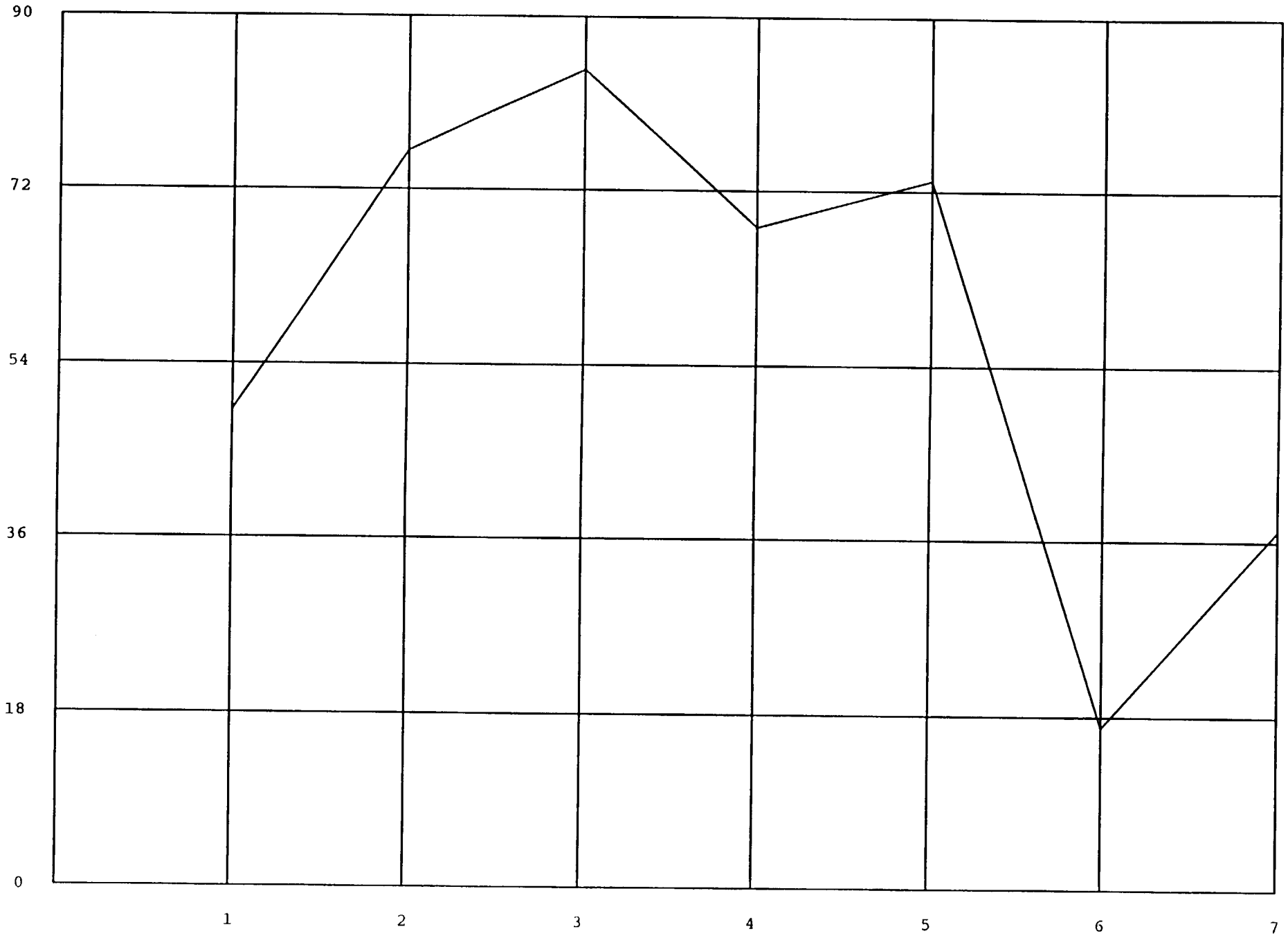

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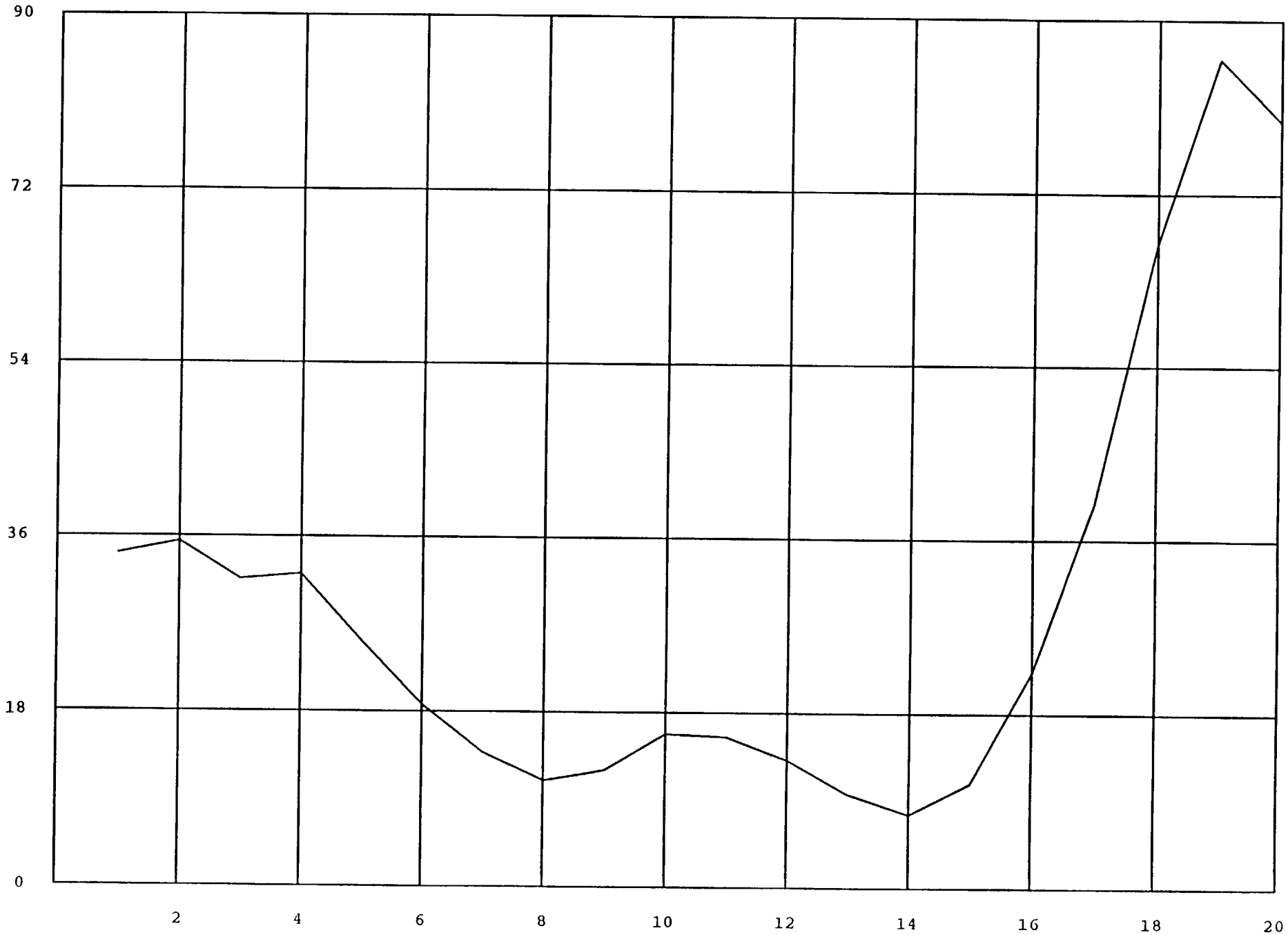

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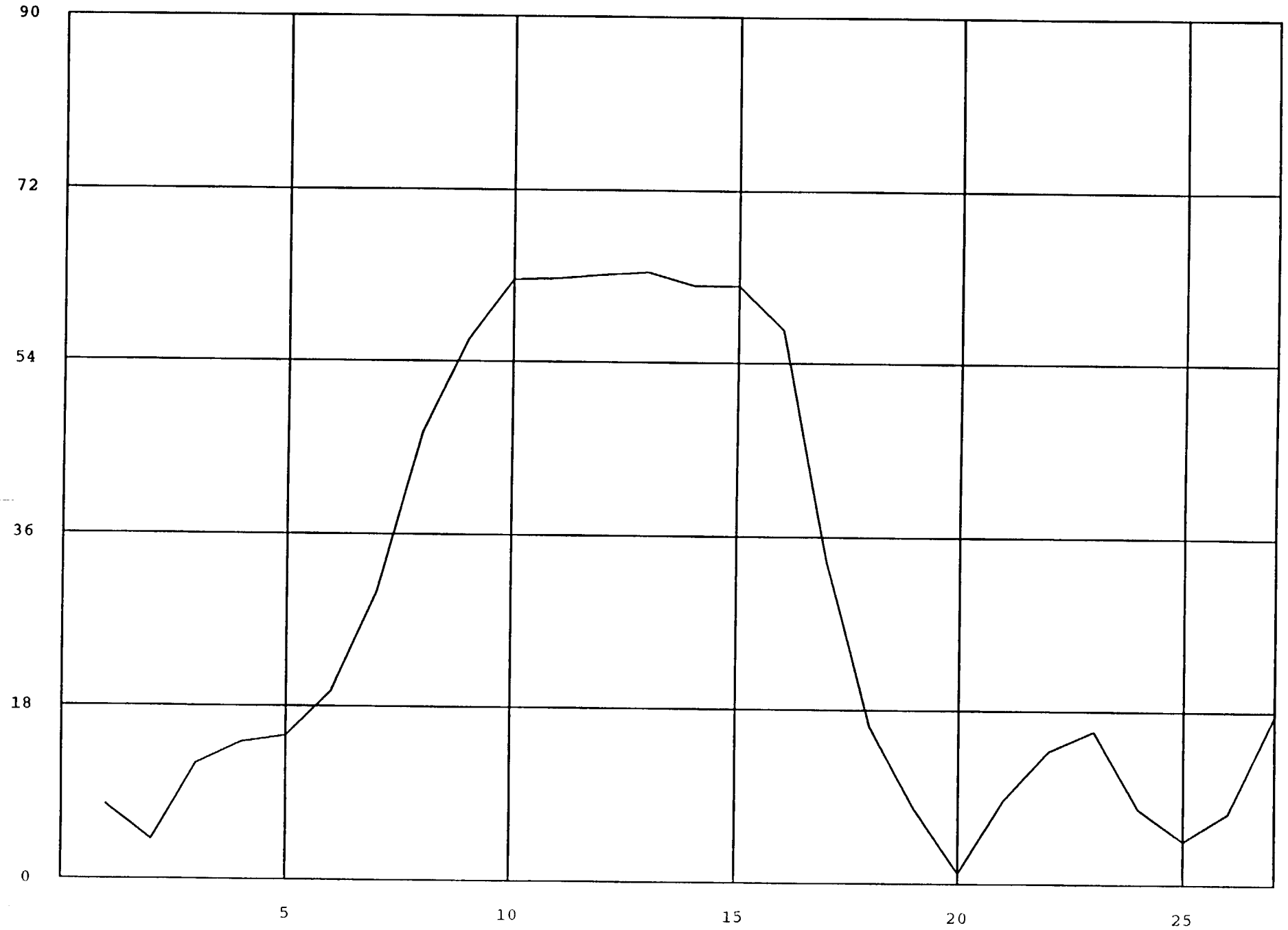

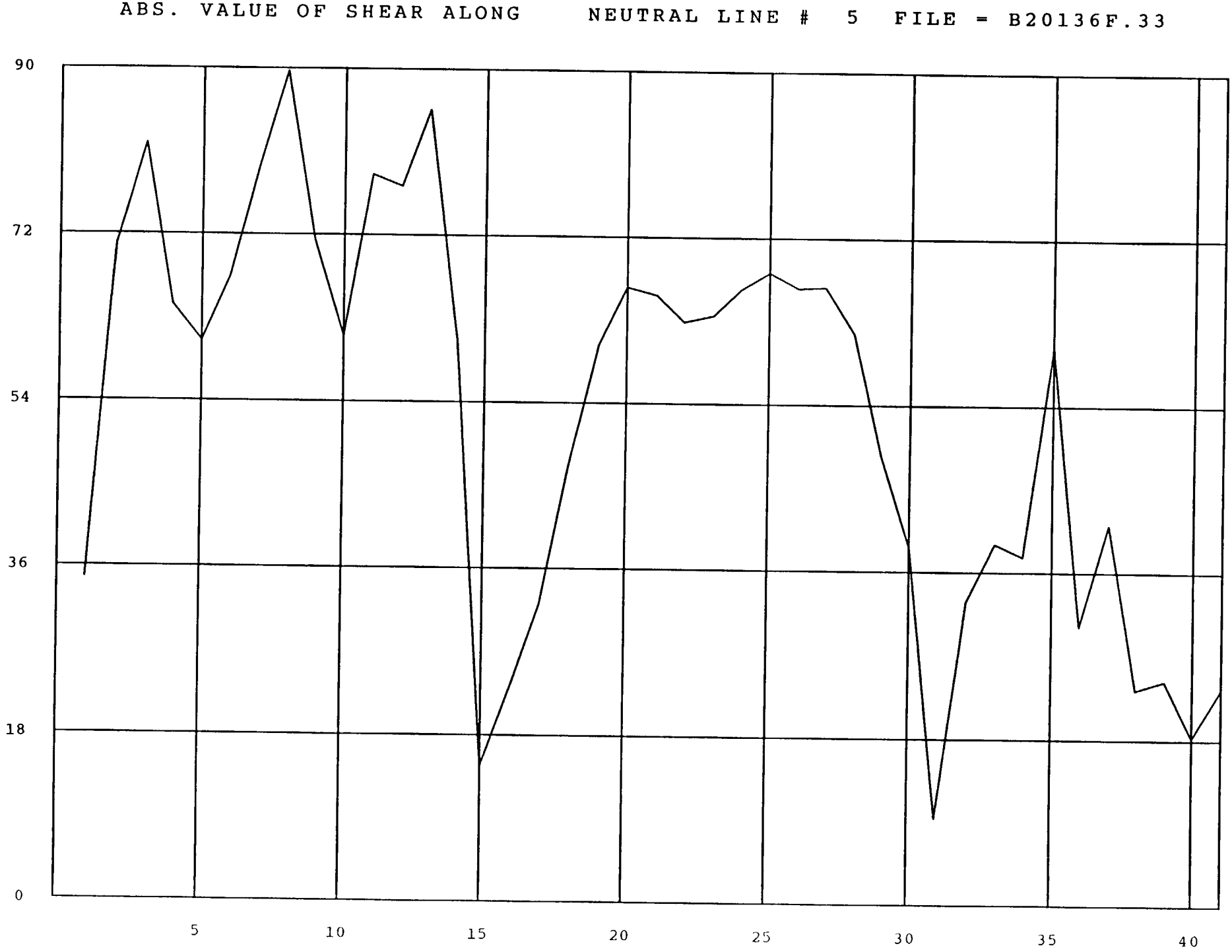
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72
54
36
18
0
5
10
15
20
25
30
35
40

MARSHALL SPACE FLIGHT CENTER MAGNETOGRAMS

TELEPHONE : 205-544-7632 FTS:824-7632

LONGITUDINAL PLOT
AZIMUTH PLOT

30-JUN-93 00:06:53

REGION NUMBER: 6994

DATE: 07-JAN-92

DAY: 7 HR:18 MIN:54 SEC:46

X(10,120) Y(10,120)

ZEISS FILTER:1269

ENHANCEMENTS: 128

EXPOSURE: 65

XPOS: -0.03 YPOS: 2.29

CK= 0.700000E+01
C1= 0.000000E+00
C2= 0.000000E+00

A	25	H	-25
B	100	I	-100
C	500	J	-500
D	1000	K	-1000
E	1500	L	-1500
F	2000	M	-2000
G	2500	N	-2500

AMIN= 250
AMAX= 500

N
E W
S

OFFSET ANGLE= 0.00

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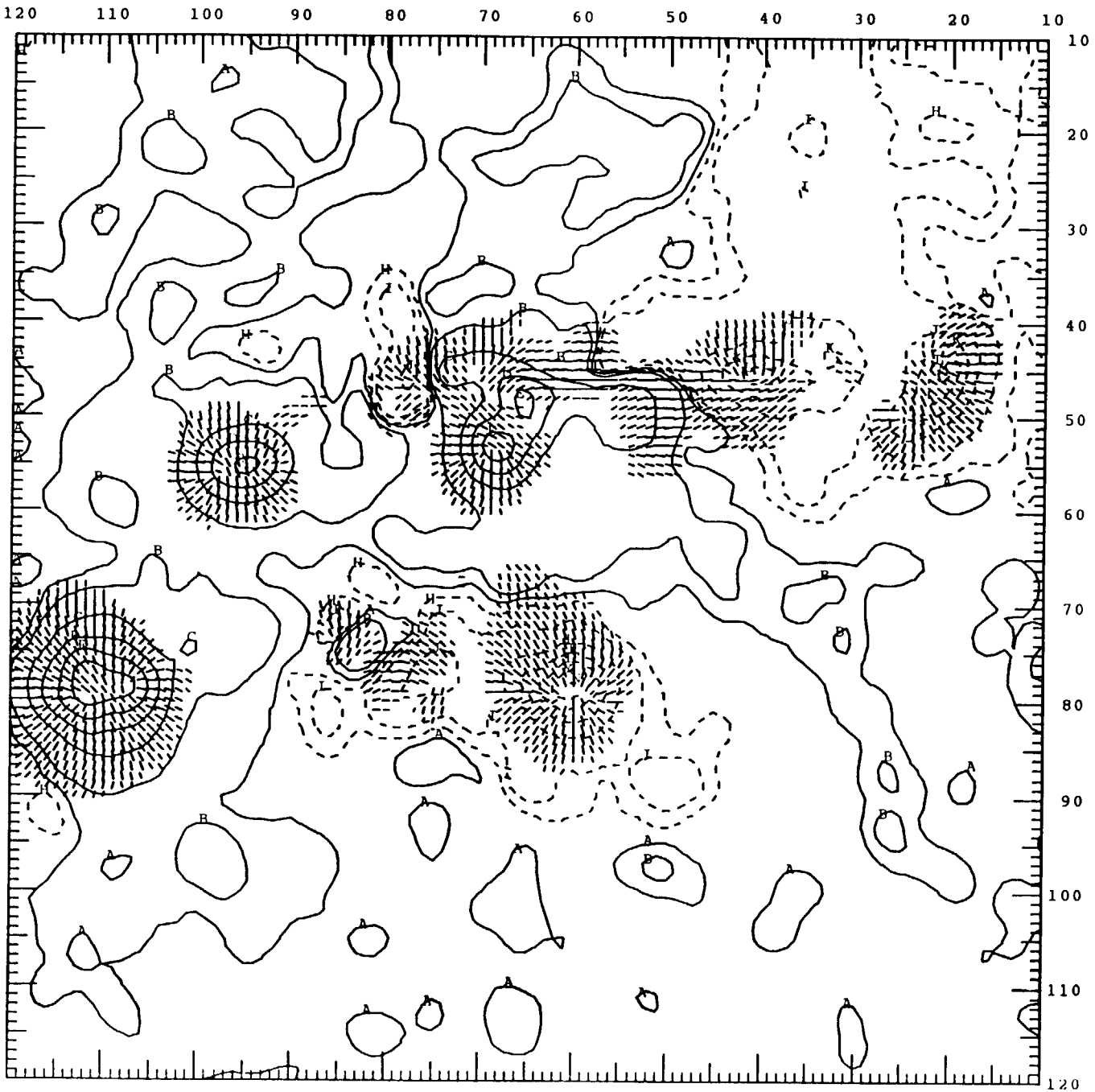
FILENAME: B20136F.02



MARSHALL SPACE FLIGHT CENTER MAGNETOGRAMS

TELEPHONE : 205-544-7632 FTS:824-7632

3A3B INTENSITY PLOT

29-JUN-93 23:56:59

REGION NUMBER: 6994

DATE: 07-JAN-92

DAY: 7 HR:18 MIN:54 SEC:46

X(10,120) Y(10,120)

ZEISS FILTER:1269

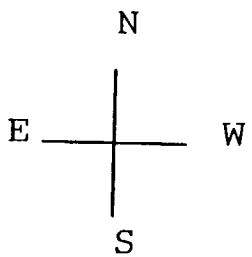
ENHANCEMENTS: 128

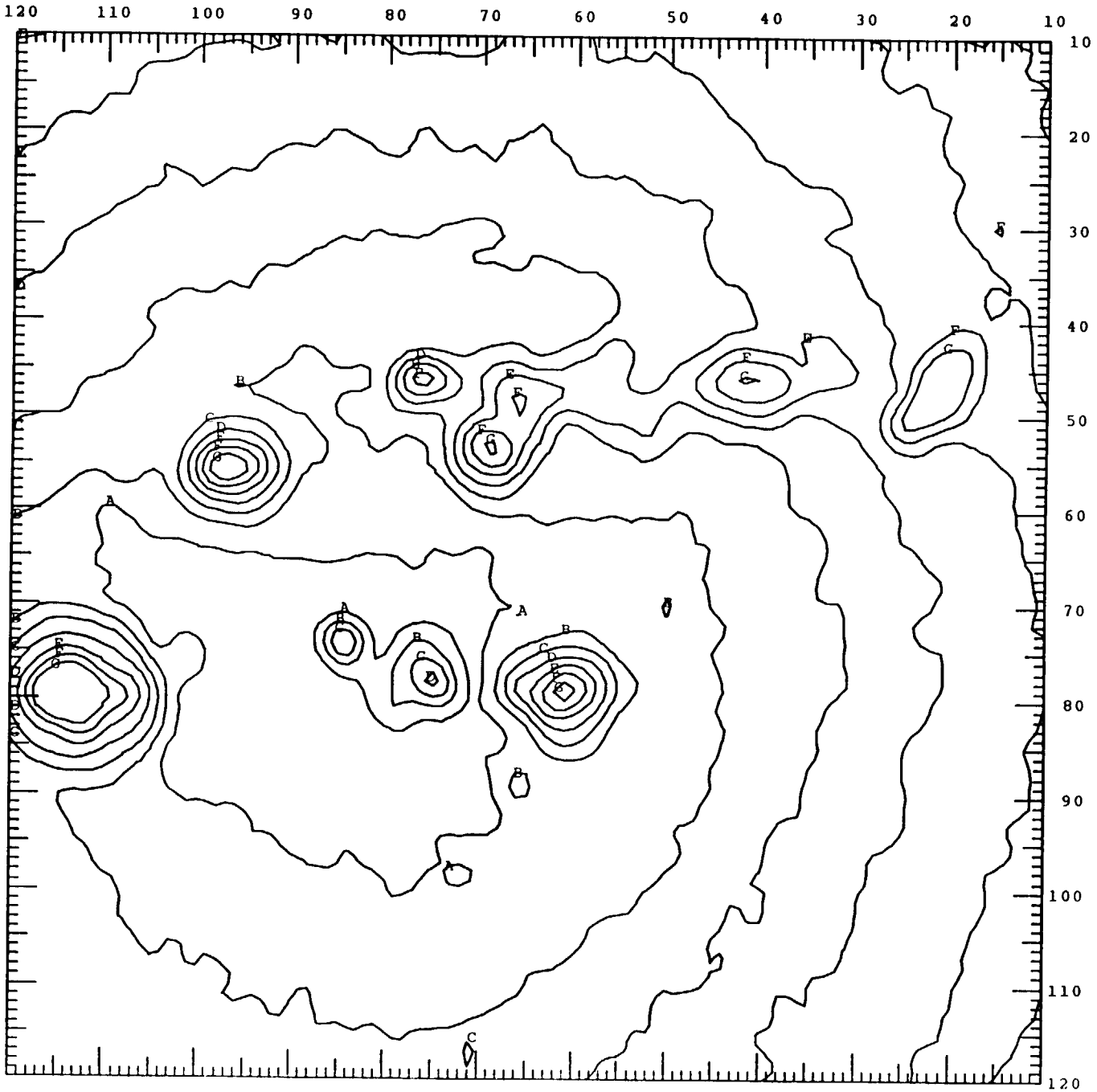
EXPOSURE: 65

XPOS: -0.03 YPOS: 2.29

CK= 0.700000E+01
C1= 0.000000E+00
C2= 0.000000E+00

A	3200
B	3000
C	2800
D	2600
E	2400
F	2200
G	2000





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